PRELIMINARY SURVEY OF THE MARKETING OF FARM WOODLAND PRODUCTS IN THE NORTHERN NEW ENGLAND STATES

by

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NORTHEASTERN FOREST EXPERIMENT STATION
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FOREWORD

The Station in 1948 initiated a study of the problems of marketing and pricing of farm woodland products. The first step in this project involved some preliminary surveys designed to give an over-all view of the principal conditions and problems.

This report covers a brief survey of the situation in the three northern New England states--Maine, New Hampshire, and Vermont.

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NORTHEASTERN FOREST EXPERIMENT STATION

Historical Background[1]

Many of the farm and forest problems of northern New England, especially those of the so-called "hill towns" of Vermont and New Hampshire, are deeply rooted in its agricultural history. The tranquil wooded countryside that is seen today is the end product of a series of rather violent changes that have taken place in the past 200 years.

Settlement of this northern territory went on at a moderate pace prior to the Revolutionary War, with New Hampshire in the lead. About 1790, the rate of settlement took on the aspects of a boom that lasted until about 1830. Within these 40 years, the population of Maine increased more than 300 percent, Vermont's went up 225 percent, and New Hampshire's 90 percent. The hills and dales of northern New England, except in the extreme northern half of Maine, began to teem with people. This great wave of settlement had a preference for the hill country

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[1] For a more complete account of this see: Wilson, Harold Fisher. The hill country of northern New England, its social and economic history 1790-1930. 455 pp. Columbia University Press, New York. 1936.

because the hill lands were easier to clear and break than were the lowlands.

Much of the timber was a mixed stand of hardwood and softwood. There was no market for lumber and no adequate transportation system to transport it if there had been. Most of the trees were felled and burned to get them off the land. Some of the wood ash, rich in potash, was exported for fertilizer and other uses. Much of the land was stony and strewn with boulders. These were gathered from the little fields and pastures and piled in stone dikes that are still to be seen almost everywhere.

This hill land apparently never produced heavy crops. Its production was, however, sufficient to meet the needs of the time. With 80 to 90 percent of the population engaged in farming there was little market for any surplus of farm produce. It was subsistence farming in an economy of practically self-sufficient family units. Each farm produced about all that the family consumed, including the homespun clothes. Much of the productive time of the farm family went into the making of the implements, tools, furniture, clothing, and buildings that were needed for its own use. The hill farms were remote and isolated much of the winter but that didn't matter. There was little necessity to send things out or bring them in. The village blacksmith and the neighborhood grist mill provided what could not be made on the farm. The psychology of the time was one of exuberant confidence and satisfaction--despite the grueling work and hardship that were shared by all.

Meanwhile the development of manufacturing industry began in southern New England, and this was the force that finally sealed the doom of the original farming system of the hill-farm country. The first disrupting influence from the growing manufacturing communities came in the economic demand for meat animals. Droves of beef cattle and pigs began to move over the roads from New Hampshire and Vermont to Boston and other cities. Manufactured goods began to trickle into hill-country village stores. This stimulated a desire for factory goods, obtainable only for money. The farmers began to devise ways to increase their money income.

One of these was the so-called "sheep mania" touched off about 1810 with the introduction of the fine-wooled Merino breed. The sheep population went up by leaps and bounds. Small woolen mills sprang up in many back-country villages. Handsome profits were being made until sheep almost overran the country. Vermont had 1,700,000 sheep in 1840. New

Hampshire and Maine had about 600,000 each.[2] Breeding stock were shipped to the West and even to Australia and South America. Then in 1841 the bubble burst with a lowering of the wool tariff, which was abolished entirely in 1846. The demand for wool during the Civil War years brought some revival of sheep farming, followed by a final slump. The sheep rapidly disappeared and have never returned. Competition from the West and from Australia and New Zealand proved too strong for the New England wool growers.

Shortly after 1830 the railroads began to push into northern New England. They provided an outlet for farm products and an inlet for more factory goods. Further seeds of unrest were thus sown in the rural communities. Hordes of young men and young women left the farms to go to the cities or to settle in the west. The long-continued trend of farm abandonment got under way and could not be arrested in spite of much viewing-with-alarm by press and politicians. The Civil War produced a further exodus of young men to the Union armies. A large part of them never returned--preferring to take employment in the cities or to join the westward wave of migration.

The war provided a strong stimulus to the interregional shipment of agricultural and other products. This meant a further increase of woes for the New England farmer as western grain and livestock came into competition with him in his own markets. There was a turn to butter and cheese for a time, but without much success. The economic blizzard for the hill-town farmer continued without appreciable let-up until about 1900.

The Abandonment Of Agriculture

The economic scars of the prolonged period of drastic readjustment in land use are most evident in the so-called abandoned farms. In one sense, it is not accurate to speak of such land as abandoned. Practically all of it still belongs to private owners who continue to pay property taxes on it. Most of these owners derive occasional cash income from sale of timber; otherwise they would have let the land revert to the town for nonpayment of taxes. A more accurate name for such lands might be "unoccupied timber farms," because many of them are just that. Figure 1

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[2]The present sheep population of these three States is less than 60,000.

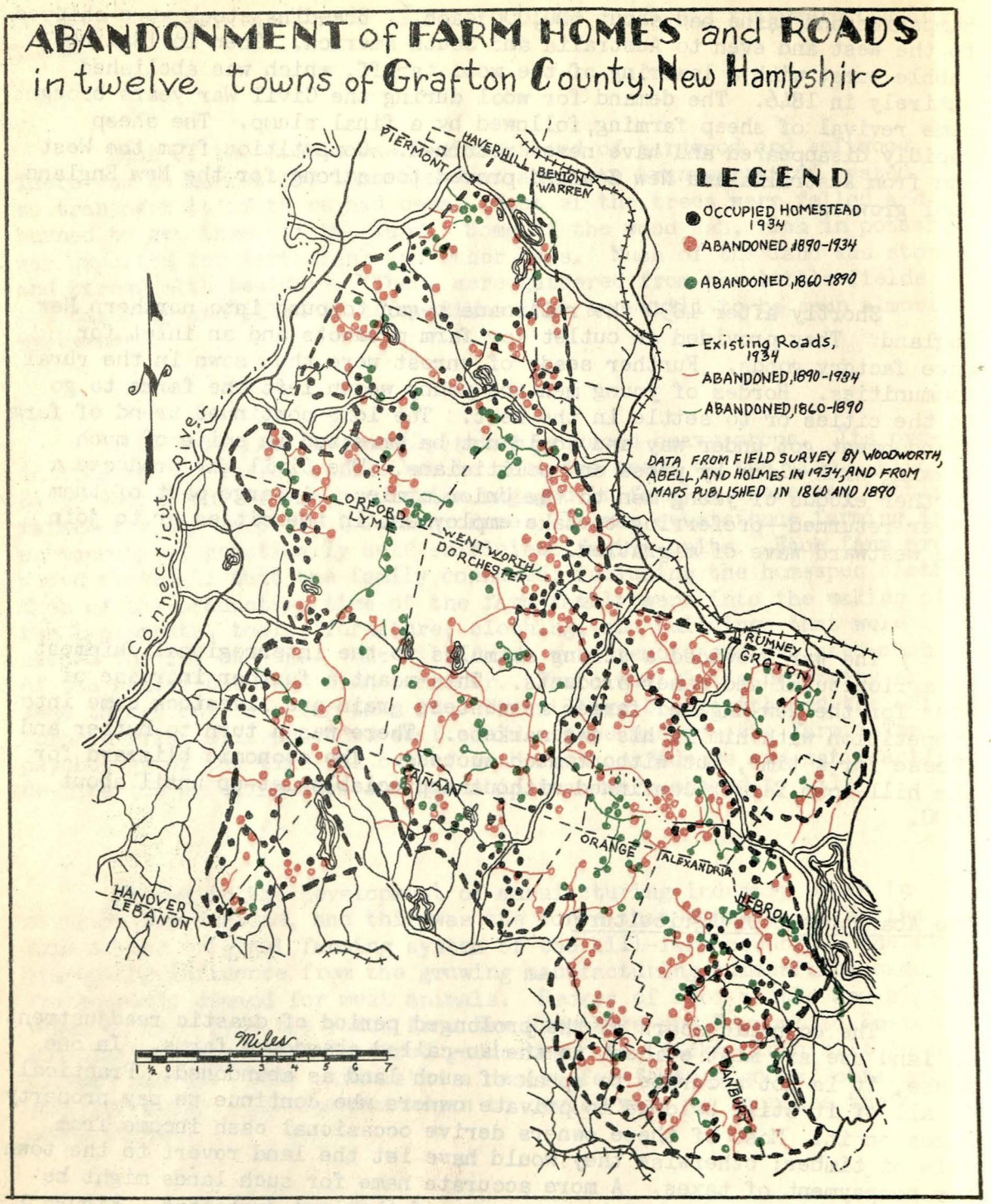

Figure 1.--Many farm homes in the hill towns have been abandoned. This map is from Woodworth, H. C., Abell, M. F., and Holmes, J. C., in Land Utilization in New Hampshire I, New Hampshire Agricultural Experiment Station Bulletin 298, 1937.

gives an interesting picture of the present intermixture of operating farms and of former farms that are no longer occupied by farmers. The map covers the southern part of Grafton County, New Hampshire, but the situation that it reveals is common throughout much of northern New England.

One unfortunate aspect of the ownership situation is that the owner of land no longer used for farming tends to have a more remote interest in it. A recent inquiry into the reasons that induce persons to acquire and retain ownership of small forest-land holdings in southwestern Maine disclosed that not more than one-third of the acreage in that locality was being held primarily for its timber-producing values.[3] This area lies in the heart of the white pine country.

Another study made in Vermont shows that absentee ownership progressively increases as farms cease to be operated (table 1).

Table 1.--Residence of owners of lands in thirteen hill towns of Vermont

Kind of property	In town	In State but not in town	Out of State
	Percent	Percent	Percent
Operated farms	85	13	2
Partially operated farms	45	40	15
Abandoned farms	18	44	38
Woodland not in farms	10	53	37

Here lies one of the fundamental problems that confront the owner of an operating farm. When he sells milk or poultry or potatoes, he

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[3]Nutting, A. D., Rettie, James C., and Banks, Wayne G. Rehabilitation of fire-damaged forest lands in southwestern Maine. Northeast. Forest Expt. Sta. Paper 23. 21 pp., illus. (Processed.) 1949.

Table 2.--Distribution of private commercial forest land in the northern New England States by size of holding 1945

Size and type of holding	Number of properties	Average size of property	Total area
	Number	Acres	Thousand acres
MAINE			
Small - less than 5,000 acres			
Farm	35,000	62	2,173
Nonfarm	46,189	90	4,151
Total	81,189	--	6,324
Medium - 5,000 to 50,000 acres	143	11,000	1,606
Large - more than 50,000 acres	31	278,000	8,611
All holdings	81,363	--	16,541
NEW HAMPSHIRE			
Small - less than 5,000 acres			
Farm	14,014	77	1,086
Nonfarm	21,041	105	2,212
Total	35,055	--	3,298
Medium - 5,000 to 50,000 acres	16	12,000	187
Large - more than 50,000 acres	8	67,000	537
All holdings	35,079	--	4,022
VERMONT			
Small - less than 5,000 acres			
Farm	15,364	96	1,494
Nonfarm	23,768	63	1,501
Total	39,132	--	2,995
Medium - 5,000 to 50,000 acres	22	11,000	234
Large - more than 50,000 acres	6	56,000	335
All holdings	39,160	--	3,564

competes chiefly with other active operators who have financial interests like his own; when he sells timber or timber products he must compete with timber that is being offered for sale by small landowners who have little or no personal interest in or knowledge of their lands. The competing stumpage may be on a small forest acreage (once an operating farm) inherited by a city druggist who keeps it chiefly because his father was born there and the heirs got a nice check when the stand of old-field pine was sold 20 years ago. The bargaining position of the active farm operator is greatly weakened by the fact that he must market his timber in competition with people who have only a minor interest in the timber-producing values of their lands.

This heritage from the long period of agricultural readjustment is evident in the 155,000 small forest holdings that embrace about half of the total commercial forest area (table 2). However, it is fortunate that most of the other commercial forest lands are in large, stable ownerships. Some of these large owners are companies that operate wood-processing plants. Others hold large blocks of land for the specific purpose of producing timber for commercial sale.

The Role Of Farm Woodlands In The Present Farm Economy

Farm forestry (in contrast with forest farming) is normally a minor factor in the total farm enterprise. It is therefore important to see it against the background of the over-all agricultural production pattern in terms of farm income. The latest Census of Agriculture provides some useful data covering the year 1944 (table 3).

The strong emphasis in Maine is on potatoes, dairy products and poultry products. These three lines add up to 83 percent of the total value of farm products sold. Forest products amount to 5 percent. There is, of course, a considerable value of forest products in the commodities produced and used by farmer's own household. Fuel wood is the leading item, but posts and custom-sawed or home-sawed lumber would also be included. In New Hampshire, 76 percent of the value of products sold is in poultry products and dairy products. Only 4 percent is in forest products. Vermont shows a much greater specialization in dairying--70 percent of the total value of products sold. Livestock ranks next with 9 percent, and poultry third with 8 percent. Forest products represent 5 percent.

Table 3.--Value of specified classes of farm products sold or used by farm household, northern New England States, 1944

Product class	Maine		New Hampshire		Vermont	
	Thousand dollars	Per-cent	Thousand dollars	Per-cent	Thousand dollars	Per-cent
Products sold:						
Fruit and nut	$ 2,000	2	$ 1,651	4	$ 1,473	2
Vegetable	3,262	4	811	2	354	(1/)
Horticultural specialty	1,300	1	1,255	3	304	(1/)
All other crops	2/ 50,394	52	1,628	4	3,551	5
Dairy	16,827	17	11,748	30	49,306	70
Poultry	13,365	14	17,739	46	5,372	8
Livestock	4,648	5	2,901	7	6,201	9
Forest products	4,600	5	1,421	4	3,698	5
Total sold 3/	96,397	100	39,154	100	70,259	100
Products used by household	13,912	--	5,552	--	9,494	--
Total value	$110,309	--	$44,706	--	$79,753	--

1/ About 0.5 percent.
2/ Chiefly potatoes in Aroostock County.
3/ Items may not add exactly to this figure because of rounding-off.
Source: Census of Agriculture 1945.

Even in these three northern States where forests are more important than elsewhere, it cannot be expected that the forestry tail will ever be able to wag the agricultural dog. Farmers will continue to look to dairying, poultry, and potatoes as their principal sources of cash income. This would still be true even though woodlot management should be greatly improved. The major problem is not purely a matter of forest management and woodland-product marketing. It is rather how to fit forest production and farm timber marketing into a combination dairy-forest, poultry-forest, livestock-forest, or potato-forest enterprise. One approach that has not yet been fully exploited is through the agencies and information channels that serve the dairyman, the poultryman, and the potato farmer.

The extent to which farmers in all lines of production engaged in the sale of forest products during 1944 is also indicated by the Census. Table 4 gives a breakdown of farms by types. This was done in two steps: first, there was a breakdown into farms that produce primarily for sale of products and farms that produce primarily for their own household use. If the value of products sold exceeded the value of products produced for the farm family's own use, the farm was placed in the first classification--otherwise in the second. Those farms producing primarily for sale were further classified according to the group of products that represented 50 percent or more of the value of all farm products sold. If no one group of products represented as much as 50 percent, the farm was classed as a "general farm."

Table 4.--Number of farms by type and number selling forest products, northern New England states, 1944

Type of farm	Maine		New Hampshire		Vermont	
	Total farms	Selling forest products	Total farms	Selling forest products	Total farms	Selling forest products
Farms producing primarily for sale:						
Fruit and nut	706	111	314	34	158	21
Vegetable	617	95	161	12	112	4
Horticultural specialty	146	4	87	2	48	1
All other crops	6,812	1,132	804	50	3,079	242
Dairy	5,124	1,253	3,194	712	11,869	4,544
Poultry	3,304	350	2,707	178	987	101
Livestock	1,208	188	687	100	702	148
Forest products	2,218	2,218	571	571	852	852
General	2,352	1,250	839	408	1,013	596
Total	22,487	6,601	9,364	2,067	18,820	6,509
Farms producing primarily for own household use	18,041	1,438	8,495	403	6,761	487
Grand total	40,528	8,039	17,859	2,470	25,581	6,996

Source: Census of Agriculture 1945.

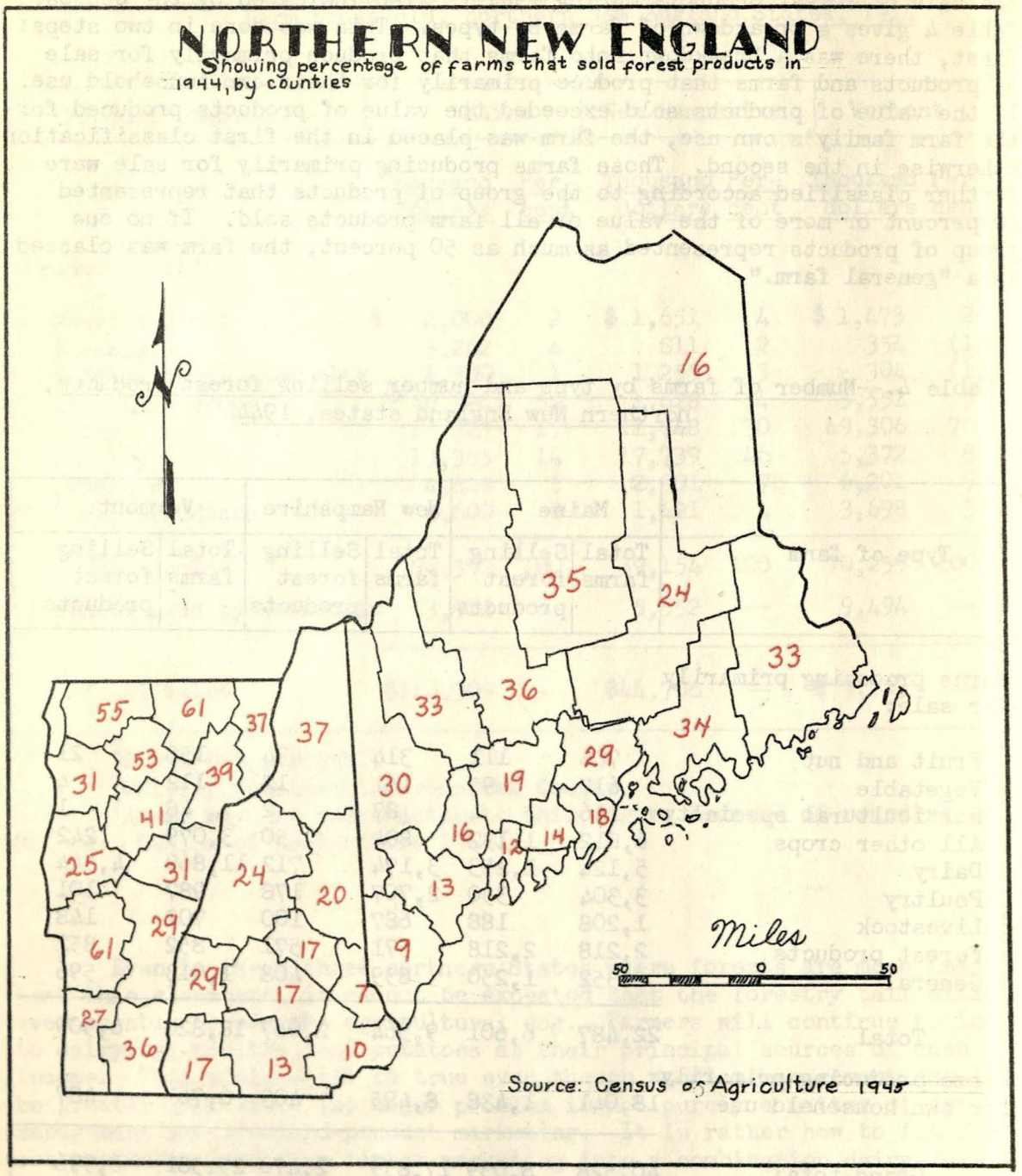


Figure 2.--A substantial number of the farms in northern New England get a cash income from selling forest products. On this map the percentage figures for the counties are based on the total number of farms having woodland acreage.

The Census also shows, by type of farm, the number that reported sale of forest products in 1944. This information is shown in table 4.

Of those farms that contained woodland acreage, a substantial percentage (Maine 24, New Hampshire 17, Vermont 38) reported sales of forest products in 1944. The high percentage in Vermont is due in large part to the annual production of maple sugar and maple syrup. In quite a number of counties well over 50 percent of the farms that contained woodland made sales of forest products. The percentage was also high in most of those counties that border or extend into the great "north woods" country. The county-by-county pattern is shown in figure 2.

The fact that farm-woodland products harvested for sale are, quite often, a periodic rather than an annual crop suggests that the percentage of northern New England farms selling forest products in 1944 was about as large as could be expected.

The cash returns from sale of forest products in 1944 is also reported in the Census. By simple calculation it is possible to determine the average cash receipt from sale of forest products per farm that made such sales. These data broken down by type of farm are shown in table 5.

The high average of more than a thousand dollars for "forest-products" farms is probably not so significant as might seem. Farms were put in this classification whenever the value of forest products sold represented more than half of the total value of products sold. Many farms that thus fell into this category in 1944 did so just because that was the year that the farm woodlot timber was sold. It may be years before such farms could be classed as "forest-products" farms again. Of more significance is the average per-farm cash receipts from sale of forest products for all the farms that made such sales. This ranged from $323 in Lincoln County, Maine, up to $909 in Carroll County, New Hampshire. The average for each county in the three States is shown in figure 3.

One other measure of the importance of farm income derived from the sale of forest products can be had by spreading the value of forest products sold over the entire farm woodland acreage within the county. This gives an average cash receipt per woodland acre. In 1944 it ranged from 64 cents in Strafford County, New Hampshire, to $4.30 in Lamoille

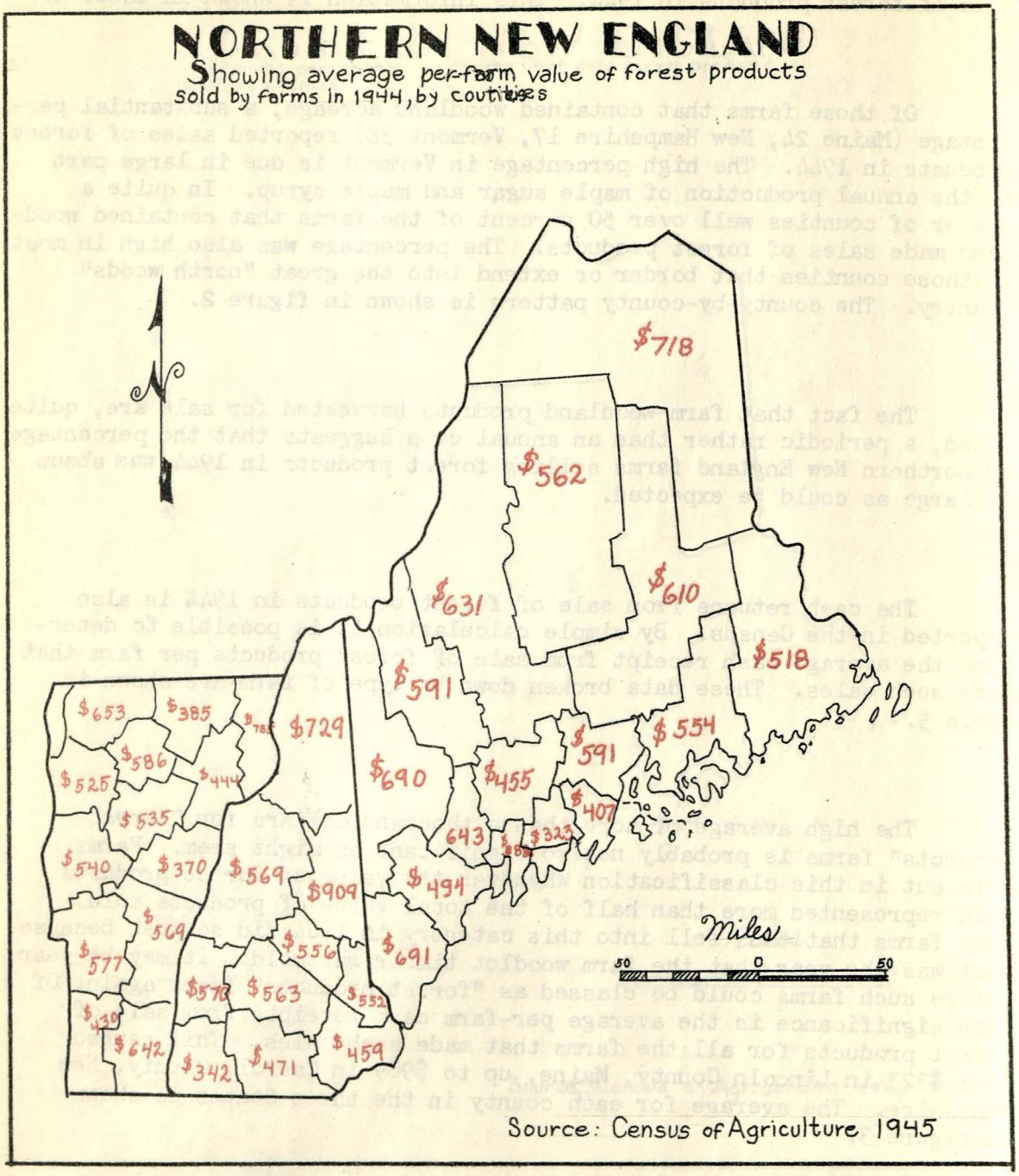


Figure 3.--The average cash income from forest products in 1944 ranged from $323 to $909. Many farmers rely on their woodlots to pay their taxes.

Table 5.--Average per-farm cash receipts from sale of forest products by farms making such sales, by type of farm, 1944

Type of farm	Maine	New Hampshire	Vermont
Farms producing primarily for sale:			
Fruit and nut	$315	$429	$358
Vegetable	322	236	289
Horticultural specialty	127	450	200
All other crops	620	479	236
Dairy	379	416	466
Poultry	315	440	290
Livestock	295	270	360
Forest products	1,031	1,144	1,112
General	544	661	681
Average	$663	$662	$556
Farms producing primarily for own household	157	131	159
Average (all farms)	$572	$575	$529

Source: Census of Agriculture 1945.

County, Vermont. The average for all three States was $1.88 per acre. The data for each county are shown in figure 4.

The farm woodlands of northern New England (not counting the former farm units no longer used for agriculture) are very largely in possession of full-owner operators. Tenancy is negligible. (Table 6).

This tenure situation shows clearly that third persons, such as real estate mortgage holders or absentee landlords, are not usually involved in sales of farm-woodland products. Insofar as the timber on operating farms is concerned, the owner is relatively free to do his own bargaining.

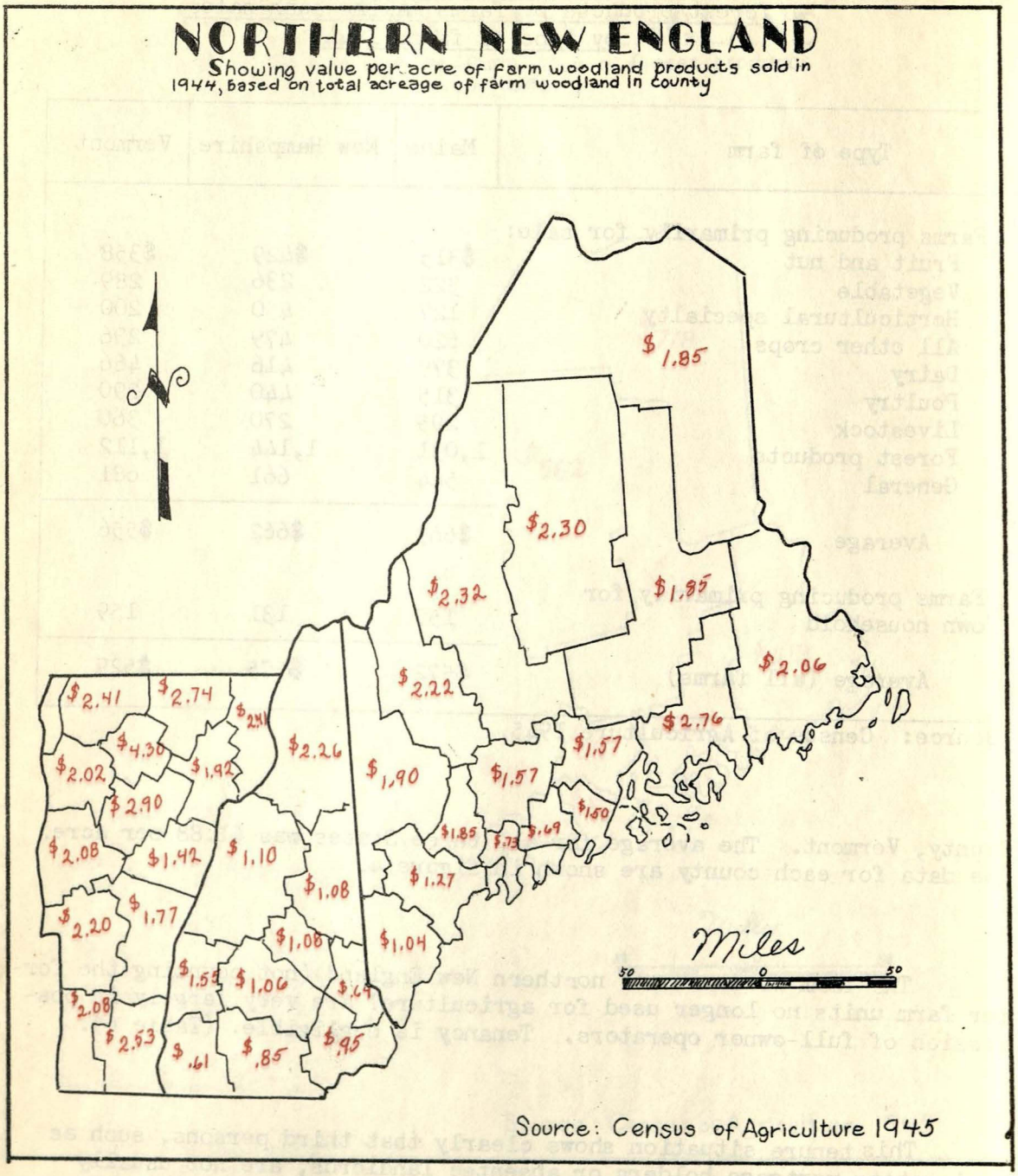


Figure 4.--The cash income from each woodland acre in the three northern New England States averaged $1.88 in 1944.

Table 6.--Tenure status of occupied-farm woodland acreage in northern New England states, 1944

State	Percent of woodland acreage in farms operated by--			
	Full owners	Managers	Part owners	Tenants
Maine	90	1	7	2
New Hampshire	81	6	10	3
Vermont	84	3	9	4

Source: Census of Agriculture 1945.

Market Outlets For Farm-Woodland Products

Practically all of the farm woodland area of northern New England is within easy reach of wood-using plants of one kind or another. With the exception of the extreme northern parts of New Hampshire and Maine and eastern Maine, areas into which agriculture has never penetrated, sawmills are thickly dotted in every county of the three States (fig. 5).

One unfortunate feature of Maine's industrial utilization of timber is the relatively small outlet for hardwoods (table 7). The turneries and the pulp mills are the only important industrial consumers of hardwood. The volume sawed into lumber is negligible. The critical nature of this deficiency of hardwood timber markets is obvious enough--50 percent of the present timber stand and about 40 percent of the current annual growth in Maine is in the hardwood species. The need for the development of new and expanded hardwood outlets is urgent.

Comparable over-all data on the wood-using industries of New Hampshire and Vermont are not available. It is known, however, that the outlets for hardwood in New Hampshire are about like those in Maine (table 8). Some of the pulp mills that draw wood from New Hampshire use a considerable percentage of hardwood pulpwood. In Vermont there are better markets for hardwood. This is indicated by Census data on lumber production, showing that from 25 to 38 percent of the lumber sawed in Vermont is of the hardwood species (table 9).

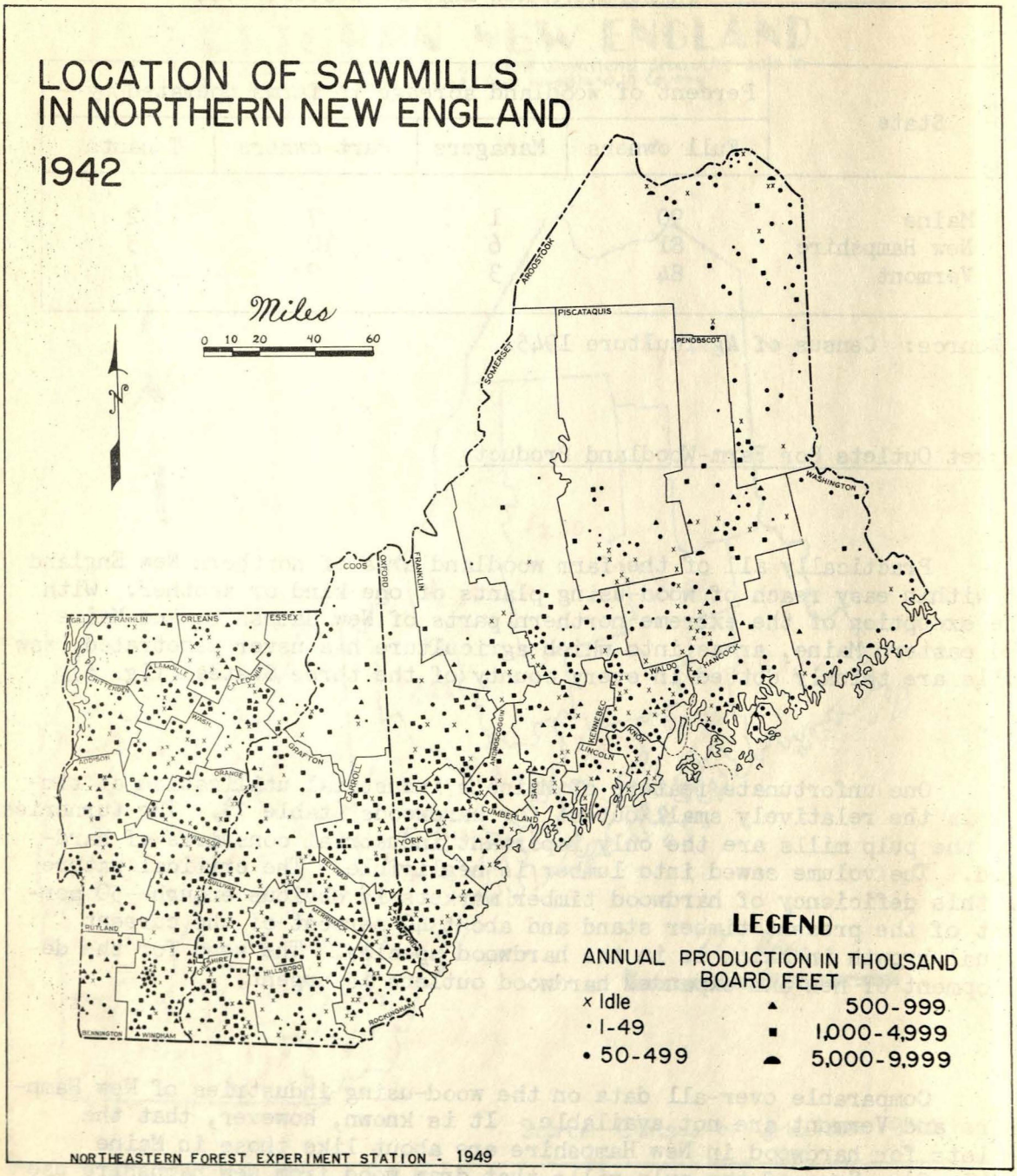


Figure 5.--Northern New England is well served by sawmills.

Table 7.--Primary wood-using industries of Maine, number of establishments by type, and percent of wood volume processed by each, 1942

Type of plant	Number of establishments	Percent of total wood volume processed			
		Soft-woods	Hard-woods	Not allocated	Total
Stationary sawmills	398	(1/)	(1/)	--	19.97
Portable sawmills	219	(1/)	(1/)	--	12.79
All sawmills	617	30.82	1.94	--	32.76
Pulp mills	23	41.23	7.15	8.22	56.60
Turneries	72	.08	6.05	--	6.13
Plywood mills	20	--	1.88	--	1.88
Bolt mills	40	.62	.66	--	1.28
Cooperage mills	20	.33	--	--	.33
Shingle mills	28	.23	--	--	.23
Ties	--	.65	--	--	.65
Poles	--	.14	--	--	.14
Total	--	74.10	17.68	8.22	100.00

1/Breakdown not available.

Source: Maine Agricultural Experiment Station: The Primary Wood-Using Industries of Maine.

Table 8.--Estimated distribution of timber cut in New Hampshire, 1945

Product	Percent of total volume cut	Product	Percent of total volume cut
Lumber	50.62	Slats	0.21
Pulpwood	20.75	Staves	.20
Fuel wood	25.73	Veneer	.38
Bobbins	.95	Poles	.01
Dowels	.15	Posts	.05
Excelsior	.20	Piling	.01
Cooperage	.20	Other	.53
Shingles	.01		

Source: Biennial Report of the Forestry and Recreation Commission 1945-46. State of New Hampshire. Concord, 1946.

Table 9.--Relation of softwood to hardwood lumber production in northern New England, 1942-46

Year	Lumber from softwoods			Lumber from hardwoods		
	Maine	New Hampshire	Vermont	Maine	New Hampshire	Vermont
	Percent	Percent	Percent	Percent	Percent	Percent
1942	90	90	69	1/10	10	31
1943	90	92	75	10	8	25
1944	95	93	74	5	7	26
1945	98	91	62	2	9	38
1946	96	89	66	4	11	34

[1]This is larger than the 6 percent shown by the Maine Agricultural Experiment Station survey. The Census figures for sawmills, however, contain the production of bolt mills that saw about 50 percent of hardwoods. This factor explains at least part of the discrepancy.

Source: Census of Lumber Production.

More than half of the timber volume and considerably more than half of the current annual growth in New Hampshire and Vermont are of the hardwood species (table 10).

Table 10.--Relationship of softwood and hardwood volume and current annual growth in northern New England, 1945

State	Timber volume		Current annual growth	
	Softwood	Hardwood	Softwood	Hardwood
	Percent	Percent	Percent	Percent
Maine	52	48	63	37
New Hampshire	42	58	40	60
Vermont	44	56	41	59

Source: U. S. Forest Service reappraisal estimate.

Market And Price Intelligence

The presence of large extensive forest supporting well-established and widely distributed wood-using industries gives northern New England farm-woodland owners marketing advantages that do not exist anywhere else in the Northeast. Where the harvesting and processing of wood is such a dominant feature of the industrial landscape, it is evident that farmers will be better informed about the market outlets and the prevailing prices of woodland products.

In certain areas close to the extensive forests the marketing situation is about as orderly and efficient as could be desired. This is the general condition that prevails in Franklin County, Maine. It has an abundance of small wood-using industries within the county. Pulp mills to the east and south and west all procure part of their wood supply from this county. There is a market for almost every quality of product--both hardwood and softwood. Most of the farmers do all or a part of the harvesting of their woodland crop. Sales of farm woodland stumpage are rare in this county. It is the common practice for farmers to depend upon their woodlots for cash income to pay their taxes. A brief field survey of the marketing situation in Franklin County led to the following conclusions:

1. Most mills prefer to buy at the roadside or delivered to the mill than to cut their own products, even when they own timberland.

2. Occasionally a company or a commission buyer will send out mimeographed sheets or postcards quoting prices and specifications, but this is not the common practice. Information about demand and price normally circulates by less formal media--word of mouth in local stores and barber shops, party-line telephone, roadside conversations, and the like. It is generally agreed in the county that no farmer with woodland products to sell has any difficulty in finding out who will buy them and what the going price may be. There is not much variation in the prevailing price for similar products.

3. For the most part, the woodland products go to their highest use--white birch for turnery use, veneer logs for veneer, white ash for handles, and so forth.

4. The conditions found in Franklin County are probably more favorable than anywhere else in New England. They are certainly not typical of any extensive area. They do illustrate, however, how the existence of a well diversified wood-using economy can contribute to orderly and favorable marketing conditions.

In other parts of Maine there has been a recognized need for public aid in the marketing of farm woodland products. The Extension Forester has encouraged the county agricultural agents to give such service wherever they can. Occasional mimeographed circulars are prepared by the Extension Forester summarizing the general market and price situation. This material has been circulated to the county agents. Two farm foresters have worked in the State since the end of the war. Lack of State funds has recently made it necessary to reduce the project to one farm forester.

In New Hampshire and Vermont the wood-using industries are much less dominant in the industrial economy. This may, in part, account for the fact that both States have developed vigorous programs of public technical assistance to small woodland owners. The State of New Hampshire, with some Federal assistance, maintains eight "county foresters." Each is specifically assigned to one or two counties. Each man spends about half a month (usually October) out of each year making a complete canvass of the wood markets in his own territory. In this survey he obtains the name and address of every company and person buying timber or timber products. He obtains information on the species that are desired and on any quality specifications that the buyer may be using. Finally, he obtains information on the prices that are being offered for stumpage and for various products at roadside, on cars, and delivered at the mill. This information is then summarized in a mimeographed bulletin for a county or group of counties and becomes available to prospective sellers of woodland products. In 1947 the information for the entire State was published in a printed Extension Service Bulletin.

There seems to be general agreement within the State that this is a worthwhile effort. While it does require about 4 to 5 man-months of work per year, it provides an opportunity for each county forester to renew his contacts with all the markets of his district. This no doubt increases his efficiency in locating buyers for his clients during the remainder of the year and it provides him with fresh information.

The New Hampshire county foresters put strong emphasis on their educational function. Ordinarily, they mark a farmer's woodlot for a timber sale only when he can be present while the job is being done. Many times they mark a small plot and then assist the owner in marking the rest. The aim is to show the farmer how to select trees for harvest and at the same time maintain the productivity of his woodlot. They also try to give him some experience in estimating timber volume and values. However, these services are available to not more than 800 farmers per year. It is physically impossible for a county forester to handle more than 100 woodlots in a year. The number of farm woodlands in New Hampshire runs to 14,000.

Publicly employed foresters are somewhat handicapped in giving all the assistance that might be desirable in sales of woodland products. Because of their public position, they are obliged to assume a neutral ground between buyer and seller. Any favoritism to either party would create difficulties. The public forester is therefore likely to withdraw from the negotiations just as the critical stage is reached. This often leaves the farmer on his own just when he most needs advice. The farmer may have an approved form of contract, and he may have received bids from several prospective buyers, but still he may make a poor bargain. There is no easy solution for this problem. A private consulting forester on the other hand, is the representative of his client. It is his duty to watch out for the interests of the woodland owner all the way through the transaction--including the policing of the timber-cutting operations when these are done by someone other than the owner. (This is being done successfully under the "timber agent" plan sponsored by the New Jersey Department of Conservation and Economic Development.)

The State of Vermont employs 12 county foresters who spend all their time assisting small woodlandowners in the management and marketing of timber. Their services are available both to farm and to small nonfarm woodland owners. The owners of the larger timber properties are referred to private consulting foresters. Four additional foresters were employed in the summer of 1948 to meet the calls from people that live on or near their lands only during the summer months. The Vermont county foresters take a somewhat more active role in sale negotiations. They mark the timber on the lot and advise the owner as to the price that would be reasonable. They bring prospective buyers to look over a woodlot and help the owner to obtain several bids. After the owner decides which bid he will accept, the county forester may give some assistance in drawing up the sale contract. He may even make a check on compliance. This service goes further than most public foresters usually go. It is done in Vermont without difficulty largely because it has become traditional for the county foresters to do it.

Price and markets information has been collected from time to time by the county foresters and by the State Forester for use in their services to woodland owners. A monthly mimeographed bulletin (Forest Exchange Service) issued by the State Forester carries a list of items for sale or wanted. Stumpage, logs and other primary woodland products are included along with lumber and machinery of various sorts. No price information has been included in this bulletin, but a new project in which the State Extension Service and the State Forester are cooperating will soon be providing both price and market information. Plans for the orderly release of this information have been worked out.

Quality Specifications

Knowledge of the quality specifications that determine whether a particular tree or log or bolt can best be sold for veneer, handle stock, turnery stock, lumber, pulpwood, piling, posts, fuel wood, or some other use, is very important to the woodland owner. The maximum return from the woodland harvest is most likely when the high-quality material can be sold to the plant that will put it to most appropriate use. All too often it is possible to find some fine veneer logs on a sawmill log deck, turnery bolts in the pulpwood piles, or piling-quality material that has been cut into short logs. Such failure to divert quality timber into its most appropriate use not only entails losses to the woodland owner, it also increases the costs of manufacturers who need high-quality material for their special product. Often they are compelled to buy much wood that they cannot efficiently use in order to obtain a smaller quantity of the kind that they can use.

A complete canvass of all wood-using plants to obtain information on their raw material specifications was not attempted in this preliminary survey. It was possible, however, to obtain a few that are probably typical:

Sawlogs, hardwood

The range of log size, allowable defect, and species acceptable is so wide that no valid generalizations are practicable. The summaries given here are the principal specifications used by some of the larger mills:

1. Species: yellow birch, sugar maple, white birch,
   Minimum top diameter: 8 inches, inside bark.
   Lengths: 12, 14, 16, 18, 20 feet; logs to be cut 4 inches over length for trim.
   General: Logs taken as woods-run grade. Woods-run to mean the entire product of the cut, exclusive of culls. Defects for which full-scale deductions must be made include hollows or large holes, rot, windshake, large or excessive worm holes, splinter pulls, seams, and knots in excess of 6 inches per 4-foot length.

2. Species: yellow birch
Minimum top diameter: 12 inches
Lengths: --
General: Accept any log that in spite of defects which are scaled out, is worth handling from the producer's standpoint as well as the operator's.

3. Species: All local hardwoods.
Minimum top diameter: 10 inches.
Lengths: 4 to 16 feet.
General: Accept up to a 3-inch unsound heart. Allow one burl or heavy knot to a 4-foot length. No limb knots allowable.

4. Species: All local species except beech.
Minimum top diameter: Ash and oak--10 inches.
All other species--8 inches.
Lengths: Softwoods, 10 feet and up.
Hardwoods, 8 feet and up.
General: Scale deductions will be made for non-usable wood. Oak and ash must be reasonably free from defect.

5. Species: Sugar maple, red maple, yellow birch, white birch, beech, ash, basswood, oak, white pine, spruce, hemlock.
Minimum top diameter: 10 inches.
Lengths: Hardwoods, 8, 10, or 12 feet.
Softwoods, 8 to 16 feet.
General: Every log to be at least 50 percent merchantable.

6. Species: Hardwoods and softwoods.
Minimum top diameter: Softwoods, 8 inches.
Hardwoods, 10 or 12 inches.
10 percent in 10 and 11-inch top diameters.
Lengths: 10 to 16 feet, with as many 14- and 16-foot lengths as possible.
General: Buy a log-run grade with culls out.

Veneer logs

The veneer industry in northern New England, as elsewhere, falls into two classifications: those plants cutting high-grade veneer for use in furniture, aircraft, plywood, and such products, and those cutting veneer for

use in the making of baskets and other containers. The high-grade plants utilize hard maple, yellow birch, black cherry, beech, and white birch. The container veneer plants can use many other species including basswood, poplar, oak, and spruce.

Veneer logs are bought on specifications, but these have by no means been standardized. Any attempt to work out a generalized set of specifications would have little value because each mill has a different one. The following set of log specifications is published by one of the high-grade veneer companies:

1. Aircraft veneer.
   Top diameter: 14 inches and up.
   Length: As long as possible from 6 feet to 16 feet with as few 14's as possible.
   General: Must be straight, sound, fresh-cut, and free of all visible defects. Crook under 2 inches is not considered a defect in any grade.

2. Select.
   Top diameter: 12 inches and up.
   Length: 8 feet to 16 feet with as few 14's as possible.
   General: Must be fairly fresh cut. Number of permissible defects without degrade or cut in scale--if less than 14 feet long, 1 defect; if 16 feet long, 2 defects.

3. No. 1.
   Top diameter: 10 inches and up.
   Length: 8 feet to 16 feet with as few 14's as possible.
   General: Must be fairly fresh cut. 10 feet and 11 feet must be clear. If 12 feet and up permissible defects without degrade or cut in scale--8-14 feet long, 2 defects; 16 feet long, 4 defects.

4. No. 2.
   Top diameter: 8 inches and up.
   Length: 8 to 16 feet.
   General: 8 and 9 foot must be clear. 10-foot must be merchantable; i.e., net board-foot scale must be after deduction for defects, not less than 50 percent of log scale.

Turnery bolts

Species: Strong preference for white birch but scarcity of this species is forcing a greater use of sugar maple, yellow birch, and beech.
Top diameter: 6 or 7 inches.
Length of bolt: Usually 48 inches. Some plants specify 50 inches.
General: Plants usually accept more defect in white birch than in other species. 6 linear inches of knot area in knots not over 2 inches in diameter is usually acceptable in white birch--not more than 4 linear inches in other species. Up to 1/3 or 1/2 diameter of bolt in sound red-heart usually acceptable. Otherwise the bolts must be sound, straight, fresh cut and must contain no crotches.

Ash handle stock

Species: White ash.
Top diameter: 8 inches inside bark.
Length: Bolts are usually 29 to 57 inches long. Logs are 8 to 16 feet although special lengths such as 9 feet 6 inches, 12 feet 6 inches, or 14 feet 6 inches are often required.
General: Timber to be second growth, tough texture, free from rot, abrupt crooks, and bends. Limb logs and bolts usually not acceptable.

Pulpwood

Species: Spruce, balsam fir, hemlock, sugar maple, red maple, white birch, grey birch, yellow birch, beech, oak, elm, willow, cedar, tamarack.
Top diameter: Rough, 4 inches inside bark.
Peeled, 4 inches. Spruce and fir are sometimes taken to 3 1/2" minimum top diameter, peeled.
Length of bolt: 48 inches.
General: Pulpwood to be sound, reasonably straight and smooth, square ends, and limbs closely trimmed. Burned, crotched, or excessively knotty bolts usually not acceptable. A maximum diameter of 15 inches is sometimes set for hemlock, pine, and hardwoods.

The above species are usually grouped into four or five groups. The species grouping of hardwoods varies by mills but in general the groups include the following species:

(1) Spruce and balsam fir.
(2) White pine, tamarack, hemlock, cedar.
(3) Aspen, beech, black cherry, yellow birch, white birch, grey birch, sugar maple, and red maple.
(4) Oak, elm, willow.

Excelsior wood

Species: Aspen, basswood, white pine.
Top diameter: 4 inches.
Length: 48 or 49 inches.
General: Bolts must be cut from sound timber, free from big knots and crotches. Generally all wood must be peeled although some plants will accept rough white pine.

Posts (for creosoting)

Species: Norway pine.
Top diameter: 6 inches inside bark.
Length: 6 to 8 feet.
General: Posts must be sawed square and limbs closely trimmed. Posts must be straight and free from decay, worm holes, cracks, splits, and checks. Diameter of any one knot not to exceed 2 inches and sum of the diameters of all knots in any 1-foot section not to exceed 10 inches. Posts for home or local use are often much smaller and allow more defects.

Poles and piling (for creosoting)

Species: Norway pine.
Top diameter: No larger than 10 inches.
Length: Variable. All poles and piling can be cut 6 inches over their specified length but not more than 3 inches under.
General: All poles and piling are to be cut from live trees. Poles and piling must be free from decay, worm and bird holes, cracks, splits, and scars. The diameter of any single knot on poles and piling 45 feet and under cannot be more than 3 inches and the diameter of all knots in any one-foot section must not be more than eight inches. Poles and piling must be free from short crooks and so straight that a line

from center of top to center of butt will not fall out of the body of the pole or piling. Poles and piling must be sawed square at tip and butt and all limbs must be trimmed close to the body of the pole or piling.

Even the most cursory reading of the above specifications will show that knowledge and skill are required in deciding what products can be harvested from any given stand of timber--particularly so if it contains a mixture of species. There can be no doubt about the need for greater uniformity and simplicity in the specifications themselves and for a wider understanding of them by all woodland owners. There is a major research job in the further development of a system of specifications and a larger extension job in getting them widely understood by the sellers and buyers of timber and timber products.

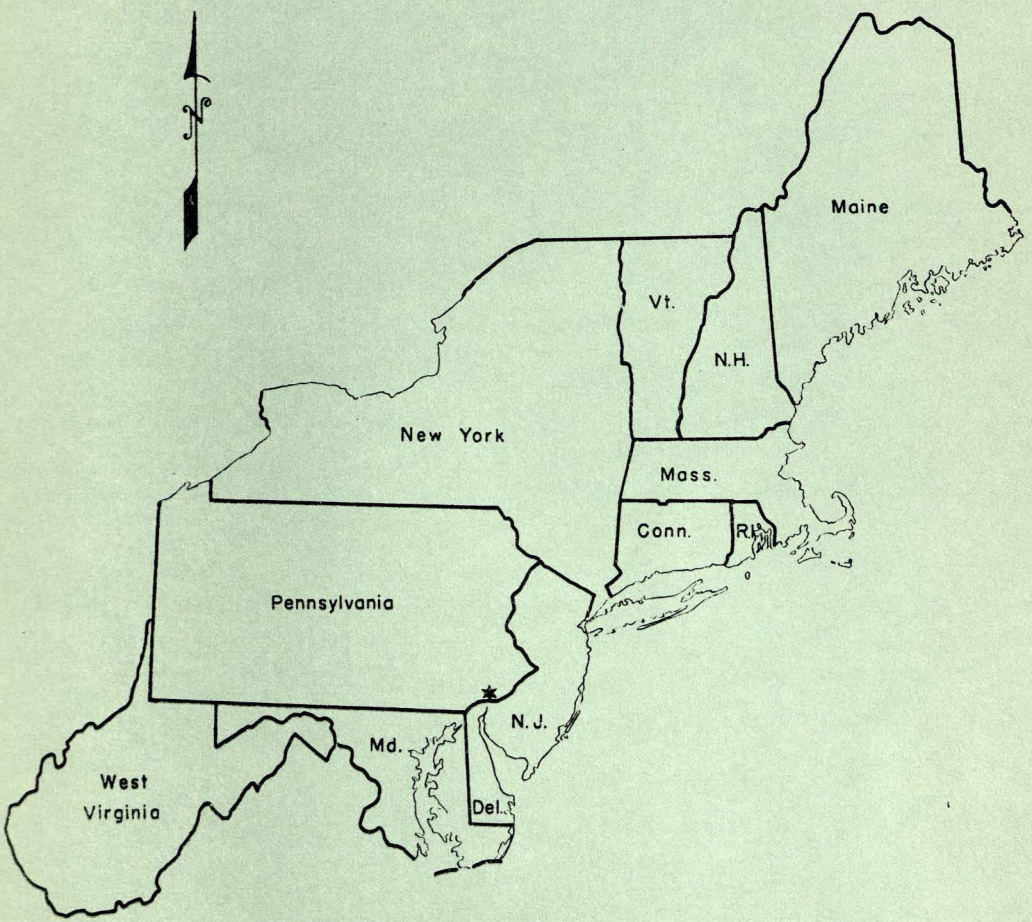
Conclusions

The forest-products marketing problem of the northern New England States has two quite different aspects. About half of the total commercial forest land is in large and reasonably stable ownership. This provides a dependable base for the existing pattern of permanently-established wood-using industries located on the fringe of the extensive forests. Many of the owners of these large holdings own and operate processing facilities of their own. The others are able to exercise their bargaining power effectively and to employ competent men to handle such transactions for them. This situation helps to set the tone for the further development of orderly and intelligent marketing of all forest products. Some of the needs for market intelligence and for technical assistance are not so urgent as elsewhere, but, on the other hand, the potentialities for further improvements are far greater than in areas where marketing conditions are poor.

The other half of the commercial forest acreage is in small holdings--farm and nonfarm. These forest owners are confronted with definite marketing problems. With the possible exception of Vermont, there is an inadequate market outlet for hardwood species--especially for the lower-quality material. Development and use of standard specifications that will enable the forest owner readily to recognize trees suitable for the various specialized uses (handle stock, veneer logs, turnery bolts, etc.) would aid in the development of such utilization. The use of hardwood sawlog log grades in the buying and selling of such material should also

encourage the production of more hardwood lumber and the growing of better-quality hardwood timber. The pure stands of softwoods that came in following the abandonment of cultivation and intensive pasturing some 50 to 100 years ago, led to a neglect of the hardwoods. The stands now being established will inevitably contain a much larger component of hardwoods. Expanded utilization of such species is greatly needed.

Further development of forest products price and market reporting services is desirable. This can probably be done best through the county forester system now well developed in Vermont and New Hampshire.



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